Listing of Claims

1 – 62. (Canceled)

63. (Previously Presented) A method of detecting a biological condition associated with an activating PDGFRA mutation in a subject, comprising determining whether the subject has an activating mutation in PDGFRA, and wherein the activating mutation comprises a variant nucleic acid sequence shown in one or more of positions 2072 through 2107 or 2090 through 2937 of SEQ ID NO: 26.

64. (Previously Presented) The method of claim 63, wherein the activating mutation comprises a variant nucleic acid sequence shown in one or more of position 2919 of SEQ ID NO: 3, 2917 and 2918 of SEQ ID NO: 5, 2927 and 2928 of SEQ ID NO: 7, 2075 to 2080 of SEQ ID NO: 9, 2089 to 2093 of SEQ ID NO: 11, 2076 of SEQ ID NO: 20, 2017 and 2072 of SEQ ID NO: 22, or 2916 to 2919 of SEQ ID NO: 24.

65. (Previously Presented) The method of claim 63, which is a method of detecting neoplasia.

66. (Previously Presented) The method of claim 65, wherein the neoplasia comprises a GIST.

67. (Previously Presented) The method of claim 63, comprising:

reacting at least one PDGFRA molecule contained in a clinical sample from the subject with a reagent comprising a PDGFRA-specific binding agent to form a PDGFRA:agent complex.

68. (Previously Presented) The method of claim 67, wherein the PDGFRA molecule is a PDGFRA encoding nucleic acid or a PDGFRA protein.

69. (Previously Presented) The method of claim 67, wherein the PDGFRA specific binding agent is a PDGFRA oligonucleotide or a PDGFRA protein specific binding agent.

70. (Previously Presented) The method of claim 67, wherein the sample comprises a neoplastic cell or is prepared from a neoplastic cell.

71. (Previously Presented) The method of claim 63 wherein the PDGFRA molecule is a PDGFRA encoding nucleic acid sequence.

72. (Previously Presented) The method of claim 71, wherein the method comprises HPLC denaturation analysis of a PDGFRA-encoding nucleic acid molecule.

73. (Previously Presented) The method of claim 71, wherein the agent comprises a labeled nucleotide probe.

74. (Previously Presented) The method of claim 73, wherein the nucleotide probe has a sequence selected from the group consisting of:

(a) SEQ ID NO: 3, 5, 7, 9, 11, 20, 22, or 24;

(b) fragments of (a) at least 15 nucleotides in length, and including the sequence shown in position(s) 2919 of SEQ ID NO: 3, 2917 and 2918 of SEQ ID NO: 5, 2927 and 2928 of SEQ ID NO: 7, 2075 to 2080 of SEQ ID NO: 9, 2089 to 2093 of SEQ ID NO: 11, 2076 of SEQ ID NO: 20, 2017 and 2072 of SEQ ID NO: 22, or 2916 to 2919 of SEQ ID NO: 24.

75. (Previously Presented) The method of claim 63, further comprising *in vitro* amplifying a PDGFRA nucleic acid prior to detecting the activating PDGFRA mutation.

76. (Previously Presented) The method of claim 75, wherein the PDGFRA nucleic acid is *in vitro* amplified using at least one oligonucleotide primer derived from a PDGFRA-protein encoding sequence.

77. (Previously Presented) The method of claim 76, wherein at least one oligonucleotide primer comprises at least 15 contiguous nucleotides from SEQ ID NO: 3, 5, 7, 9, 11, 20, 22, or 24.

78. (Previously Presented) The method of claim 76, wherein at least one oligonucleotide primer comprises a sequence as represented by at least 15 contiguous nucleotides shown in position(s) 2919 of SEQ ID NO: 3, 2917 and 2918 of SEQ ID NO: 5, 2927 and 2928 of SEQ ID NO: 7, 2075 to 2080 of SEQ ID NO: 9, 2089 to 2093 of SEQ ID NO: 11, 2076 of SEQ ID NO: 20, 2017 and 2072 of SEQ ID NO: 22, or 2916 to 2919 of SEQ ID NO: 24.

79. (Previously Presented) The method of claim 68, wherein the PDGFRA molecule is a PDGFRA protein.

80. (Previously Presented) The method of claim 79, wherein the complexes are detected by western blot assay.

81. (Previously Presented) The method of claim 79, wherein the complexes are detected by ELISA.

82. (Previously Presented) The method of claim 79, wherein the PDGFRA protein comprises a sequence selected from the group consisting of SEQ ID NO: 4, 6, 8, 19, 12, 21, 23, and 25.

83. (Previously Presented) The method of claim 79, wherein the PDGFRA-specific binding agent is a PDGFRA-specific antibody or a functional fragment thereof.

84. (Currently Amended) The ~~agent~~ method of claim 83, wherein the agent is an antibody.

85. (Currently Amended) The ~~antibody~~ method of claim 84, wherein the antibody is a monoclonal antibody.

86. (Currently Amended) The ~~monoclonal antibody~~method of claim 85, ~~which~~ wherein the monoclonal antibody recognizes an epitope of a variant PDGFRA and not an epitope of wildtype PDGFRA.

87. (Currently Amended) The ~~monoclonal antibody~~method of claim 86, ~~which~~ wherein the monoclonal antibody recognizes an epitope of a variant PDGFRA having ~~an~~ the amino acid sequence as shown in SEQ ID NO: 4, 6, 8, 10, 12, 21, 23, or 25.

88. (Previously Presented) The method of claim 83, wherein the antibody is reactive to an epitope including the amino acid sequence shown in position(s) 842 of SEQ ID NO: 4, 841 and 842 of SEQ ID NO: 6, 845 and 846 of SEQ ID NO: 8, 561 and 562 of SEQ ID NO: 10, 565 and 566 of SEQ ID NO: 12, 561 of SEQ ID NO: 21, 559 and 560 of SEQ ID NO: 23, or 841 and 842 of SEQ ID NO: 25.

89 - 107. (Canceled)

108. (New) A transgenic non-human animal whose genome is manipulated to comprise a genetic or functional deletion of the gene encoding PDGFRA, wherein the genetic or function deletion of the gene encoding PDGFRA prevents expression of the PDGFRA protein.

109. (New) The transgenic non-human animal of claim 108, in which the genetic deletion of PDGFRA is a homozygous or heterozygous disruption of the gene encoding PDGFRA.

110. (New) The transgenic non-human animal of claim 108, which animal is a mouse.

111. (New) A cell from the transgenic non-human animal of claim 108.

112. (New) A mutant PDGFRA knockout non-human animal whose genome is manipulated by removing all or some of the coding regions of the PDGFRA gene.